

The variety *depauperata* differs from the species in having linear-oblancoolate basal leaves, pubescent lanceolate cauline leaves, and filiform pubescent branching stems; also the pods are usually ascending, whereas in *A. Lemmonii* the pods are either horizontal or somewhat pendulous.

NEVADA. Washoe County: summit of Mount Rose, Aug. 17, 1906, *Kennedy 1167* (UC, isotype of *A. depauperata* Nelson and Kennedy); July 28, 1909, *Heller 9868* (US). CALIFORNIA. Placer County: Tinkers Knob, July 18, 1897, *C. F. Sonne* (UC). Eldorado County: Mount Tallac, July, 1903, *Hall & Chandler 4624* (UC). Lake Tahoe Region: top of Ellis Peak, July 13, 1923, *W. C. Blasdale* (UC).

ARABIS RECTISSIMA Greene, *Pittonia* 4: 191. 1900. This species, heretofore almost unrecognized, has been found to be a valid and distinct specific unit. It has been collected from points in southern Oregon to Tulare County, California. The collections from California cited below will serve to show its distribution in that state.

CALIFORNIA. Siskiyou County: Black Butte north of Sisson, June 23, 1916, *Heller 12421* (US, WSC). Plumas County: Prattville, July 11, 1907, *Heller & Kennedy 8809* (UC). Lake Tahoe Region: Rubicon Park, July 16-21, 1901, *Setchell & Dobie* (UC). Yosemite Creek and Indian Canyon to Porcupine Flat, Yosemite National Park, July, 1902, *Hall & Babcock 3481* (UC); Indian Creek, July 20, 1911, *Hall 9177* (UC); Inspiration Rock, 1860-67, *Bolander 4904* (UC). Fresno County: Dinkey Creek, June 25, 1900, *Hall & Chandler 346* (UC). Tulare County: Sequoia National Park, June, 1896, *Purpus 1797* (UC); Olancha Mountain, June 25-30, 1904, *Hall & Babcock 5290* (UC).

State College of Washington,
Pullman, March 9, 1936.

VARIETIES OF THE DESERT WILLOW, *CHILOPSIS LINEARIS*

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In the course of determining my collections from the Mesilla Valley of the Rio Grande, in New Mexico, I noticed that the material of *Chilopsis* differed from the common form, known as *Chilopsis linearis* in the deserts of California. The New Mexican plants had the leaves erect and very strongly glutinous. The Index Kewensis gave the name *Chilopsis glutinosa* Engelm. which I looked up in the Botany of Wislizenus Expedition. Engelmann here mentions two forms, "one from the neighborhood of Saltillo with larger, paler flowers, broader, not glutinous leaves, and woolly branchlets, perhaps the *Ch. saligna* Don; the other from New Mexico and Chihuahua with longer, narrower glutinous leaves, perfectly glabrous, glutinous branchlets and darker and

smaller flowers, may be *Ch. linearis* DC., or a new species, *Ch. glutinosa*."

Chilopsis glutinosa has been very generally ignored since this somewhat doubtful publication. Wootton and Standley, in the Flora of New Mexico, do not even include it in the synonymy of *Chilopsis linearis*. The names *Chilopsis linearis* (Cav.) Sweet and *Chilopsis saligna* D. Don have been used more or less interchangeably for the plants from the whole range of the genus, with the majority of botanists using *C. linearis*, as it has priority. Neither of the two forms described by Engelmann corresponds well with the common California plant, with its glabrous, non-glutinous branchlets and strongly arcuate, narrow leaves. Checking up the original descriptions of both *Chilopsis linearis* and *C. saligna*, I found that they both apply to a plant with straight, linear-lanceolate leaves. No mention is made in either description of whether or not the leaves and branchlets are glutinous. According to description the branches of *C. linearis* are fuscous, but no mention is made as to whether they are glabrous or pubescent. The branchlets of *C. saligna* are described as pubescent. It is obvious from the plates and descriptions that both of these names apply to the same plant and that the plant described is the form found from central to southern Texas. This is the only one with pubescent branchlets and straight leaves as wide as those illustrated by Cavanille. It is also evident that this is the plant which Engelmann had from Saltillo. Thus the name *Chilopsis saligna* D. Don is an exact synonym of *Chilopsis linearis* (Cav.) Sweet.

Engelmann's description fits the plants which I collected in southern New Mexico very well. Unfortunately these specimens were accidentally lost or destroyed. An examination of the material of this genus in the herbaria of the University of California, the California Academy of Sciences, Pomona College, the Los Angeles Museum, and of Mr. Joseph A. Ewan brought to light a number of other collections of this form. The western form of this plant is different from either of the two from farther east in that the branchlets are glabrous or nearly so; the leaves not at all glutinous or rarely very slightly so, and strongly arcuate, standing out from the stem and bending down in a wide curve. Field study reveals that the color difference noted in the flower by Engelmann is not characteristic of the two plants discussed by him, but that there are two color phases in at least the western and the New Mexican forms. Plants with pale pink flowers with lavender and yellow markings are found growing side by side in the Mesilla Valley with similar plants having dark purple flowers with white markings. Both of these color phases have been noted in the western form, but not growing side by side. Whether or not there is a dark form of the Texas plant I do not know, as I have not seen it growing. Size of the flowers, size and form of the calyx, and woolliness of the calyx

and inflorescence vary so much that they are of no value whatever in separating these plants. Collections with perfectly glabrous inflorescences come from scattered localities over the whole range of at least the western form, and from exactly the same localities that very woolly and slightly woolly ones come.

It seems proper to separate these three plants as varieties, as their differences are scarcely sufficient to merit specific rank, and there are intergrading forms. They have fairly definite geographic ranges, and they are rather different in aspect. Not much is known about the extension of their ranges into Mexico.

I take pleasure in thanking those in charge of the above mentioned herbaria for the privilege of examining the material of this genus in their collections.

The genus *Chilopsis* D. Don, in the family Bignoniaceae, contains, as far as is known, only one species, *Chilopsis linearis*. The following description of this species will serve for a generic description as well.

CHILOPSIS LINEARIS (Cav.) Sweet, Hort. Brit. ed. 1: 283. 1827.

Shrub or small tree, up to 4-5 m. tall, spreading, branchlets slender, wandlike; leaves alternate, simple, linear to lanceolate, narrowed at base but without a very distinct petiole; inflorescence a terminal raceme, usually coarsely woolly, each pedicel subtended by a linear bract somewhat longer than the pedicel, pedicels up to 1 cm. long; calyx glabrous to densely woolly, over 1 cm. long, broadly ovoid, bilabiate, the upper lobe 3 toothed, the lower 2 toothed, the teeth small, triangular; corolla funnelform-campanulate, the tube little exceeding the calyx, the throat about 1.5 cm. long, somewhat at an angle to the tube, the limb flaring, 5 lobed, the lobes erose, about 1 cm. long, rounded, the whole zygomorphic, the lower side somewhat flattened, with 2 longitudinal folds, these folds villous inside; stamens 4, attached near the top of the tube, the two longer 1.5 cm. long, the two shorter about 1.2 cm. long, the anthers with 2 oblong-ovate cells, at maturity diverging 180 degrees from each other, dehiscent by a slit on the ventral surface the full length of the cell, opening out wide; pistil about 2.5 cm. long, the ovary narrowly cylindrical, about .6 cm. long, the stigma spatulate, becoming 1-1.5 mm. wide, somewhat split into two thin plates at the apex; fruit a linear terete 2-celled capsule up to 3 dm. long; seeds about 8 mm. long, 2-3 mm. wide, oblong, flat, thin, with obtusely pointed ends, bearing a coma 1-1.5 cm. long at each end, attached in the middle, the hilum a transverse linear scar across one side, showing through to the other surface of the thin seed.

Range: California, eastern half of Mojave Desert, also Colorado Desert; south into Baja California; east to southern Nevada, Arizona, New Mexico, Texas; south to Sonora, Chihuahua, Durango, Zacatecas and Tamaulipas, Mexico.

KEY TO THE VARIETIES

- Sterile branchlets somewhat woolly, veins in leaves prominent *C. linearis*
var. *originaria*
- Sterile branchlets glabrous or almost so, veins in leaves not usually prominent.
- Sterile branchlets and young leaves glutinous *C. linearis*
var. *glutinosa*
- Sterile branchlets and young leaves not glutinous *C. linearis*
var. *arcuata*

CHILOPSIS LINEARIS var. *originaria* Fosberg, nom. nov. *Chilopsis linearis* (Cav.) Sweet, Hort. Brit. ed. 1, 283. 1827. *Bignonia* ? *linearis* Cav., Icon. Pl. 3: 35, t. 269. 1794. *Chilopsis saligna* D. Don, Edinb. Phil. Journ. 9: no. 18, 261. 1823.

Sterile branchlets more or less woolly, not glutinous; leaves straight, linear-lanceolate, tending to diverge from the branch, heavily and conspicuously veined.

Range. Texas, eastern New Mexico, south into Mexico for an unknown distance; intergrading with *C. linearis* var. *glutinosa* in New Mexico, southeastern Texas and Mexico.

Specimens seen. TEXAS. Bexar County: San Antonio, Mr. & Mrs. Clemens 859, 860, 861. Jeff Davis County: Little Ajuga Canyon, Davis Mts., Moore & Steyermark 3154. NEW MEXICO. Chavez County: 35 miles south of Roswell, Earle & Earl 369. Grant County: Mangas Springs, 18 miles northwest of Silver City, Metcalfe 207. MEXICO. Est. Zacatecas (norte): Hacienda de Cedros, Lloyd 154. Specimens intergrading with *C. linearis* var. *glutinosa*. TEXAS. Laguna, Munz 1281 (like the variety *glutinosa*, but with twigs slightly hairy). MEXICO. Santiago Papasquiario, Durango, Palmer 421 (with narrow leaves, practically glabrous branchlets and very prominent veins); Santa Eulalia Hills, Chihuahua, 1885, Wilkinson (like the variety *originaria*, but with glabrous, somewhat glutinous branchlets).

CHILOPSIS LINEARIS var. *glutinosa* (Engelmann) Fosberg, comb. nov. *Chilopsis glutinosa* Engelmann, Bot. Wisliz. Exped. 44-45. 1848.

Sterile branchlets glabrous, glutinous; leaves linear, tending to be erect, straight or somewhat arcuate, glutinous, especially when young; calyx not as woolly as in var. *originaria*, in certain collections (Wright, Oct., 1849; Palmer 390) glabrous or practically so.

Range. New Mexico and southwestern Texas, particularly near the Rio Grande, south for an unknown distance into Mexico, intergrading with the variety *originaria* on the east and south, and with the variety *arcuata* in Arizona.

Specimens seen. TEXAS. "Western Texas to El Paso," Oct., 1849, Wright 428. Canutillo, July 12, 1911, Barlow. Brewster County: Chisos Mts., Moore & Steyermark 3264. NEW MEXICO. Along the Rio Grande, Rusby 333. Sierra County: Berendo

Creek, *Metcalf* 894. Dona Ana County: Jornada Range Reserve, 25 miles north of Las Cruces, *Ellison* 718; near Las Cruces, June 4, 1893, June 8, 1906, *Wooton & Wooton* 66. Hidalgo County: 17 miles south of Animas, Animas Valley, *Wolf* 2590 (like *C. linearis* var. *arcuata*, but the young growth somewhat glutinous). MEXICO. Vicinity of Victoria, Tamaulipas, alt. 320 m., *Palmer* 390.

CHILOPSIS LINEARIS var. *arcuata* Fosberg, var. nov.

Ramuli glabri vel paullo puberuli, non glutinosi; folia linearia arcuata.

Range. Eastern half of the Mojave Desert, California, south through the Colorado Desert to Baja California, east to southern Nevada, Arizona, western New Mexico, south to Sonora, Mexico, intergrading in New Mexico with *C. linearis* var. *glutinosa*.

Specimens seen. CALIFORNIA. San Bernardino County: Mission Creek, e. San Bernardino Mts., alt. 1000 m., *Fosberg* 8600 (type collection; type in Herb. U. C.); wash north of Lucerne Valley, Mojave Desert, *Fosberg* 8576; Daggett, Oct. 2, 1924, *Jones*; Cushenberry Springs, Aug. 31 and Sept. 1, 1924, *Abrams* 2412 and *Johnston*; San Mateo Canyon, June, 1883, *S. B. & W. F. Parish*. Riverside County: Banning, June 14, 1921, *Jaeger*, May 28, 1928, *Van Dyke*; Whitewater, Oct. 2, 1924, *Jones*; Palm Springs, *Spencer* 800, *Schellenger* 32, *G. B. Grant* 170a-6740; Dripping Springs, near Temecula, July 13, 1900, *Jones*; Aguanga, *Munz & Harwood* 7304. San Diego County: San Felipe, *Palmer* 291, *Abrams* 3979, and June 23, 1932, *Epling*, *Darsie*, *Knox & Robinson*; Cane Brakes Canyon (eastern San Diego County) *Fosberg* 8429; Jacumba, Aug. 7, 1886, *Orcutt*. Imperial County: Carriso Gorge, *Parks* 01093. NEVADA. Lincoln County: Mormon Mts., *Kennedy & Gooding* 138. Sheep Mts., *Purpus* 6133. ARIZONA. Mohave County: Union Pass, Kingman, May 3, 1893, *Wilson* 26, May 31, 1893, *Wilson*. Yavapai County: Kirkland Creek, Wickensburg, *Gillespie* 8506; Bumblebee, *Gillespie* 8712. Maricopa County: Phoenix, *Nelson* 10283 (calyx woolly), *Nelson* 10290 (calyx glabrous); Tempe, Sept. 5, 1901, *Thorner*. Pima County: Tucson, July 15, 1895, *Toumey*; Tucson, 1920, *Spencer* 284. Cochise County: Lowell, May 31-July 27, 1881, *Pringle*; Lowell, *Thorner* 51. Sabino Canyon, Santa Catalina Mts., *Shreve* 5203. Douglas, May 28, 1907, *Gooding* 2316, Chiricahua Mts., July 22, 1907, *Gooding* 2316 (two collections under this number). Pino Blanco Spring, Tumacacori Mts., *Hilend* 770. Santa Rita Mts., Nov. 1891, *Brandege*. NEW MEXICO. Rincon, Aug. 27, 1903, *Diehl*. MEXICO. Baja California: Calamujet, May 10, 1889, *Brandege*; San Pedro Martir, *Robertson* 40, 41. Sonora: El Alamo, w. Magdalena, *Kennedy* 7042.

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